

Notice of Allowability	Application No.	Applicant(s)	
	09/045,732	FULLER ET AL.	
	Examiner	Art Unit	
	Marjorie A. Moran	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/13/04.
2. ☒ The allowed claim(s) is/are 1-3,5-9,12-16,19-23,31 and 32.
3. ☒ The drawings filed on 20 March 1998 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>20050110</u> . 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
|---|---|

Marjorie A. Moran
Primary Examiner
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Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Barry Wilson on 1/10/05.

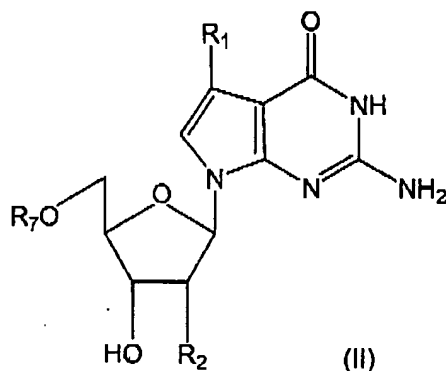
The application has been amended as follows:

In the claims:

Cancel claims 4, 10-11, and 24-30.

Add new claim 32 and amend pending claims 1-3, 5-9, 12-16, 19-23 and 31 as follows:

1. (Currently amended) Molecule comprising the following moiety:



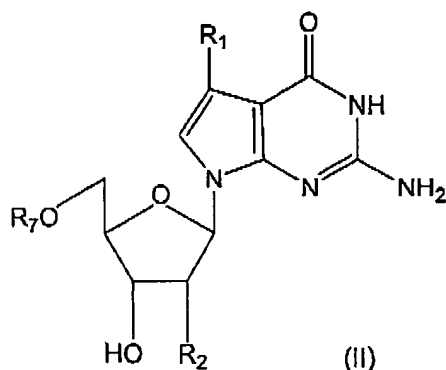
wherein R_1 is C_{1-10} alkyl group substituted by hydroxyl, ~~amino~~, C_{1-4} alkoxy or halo; and R_2 is hydrogen and R_7 is H or a mono-, di-, or tri-phosphate or thiophosphate thereof.

2. (Original) The molecule of claim 1, wherein said molecule is a nucleic acid polymer.

3. (Original) The molecule of claim 2, wherein said nucleic acid is DNA.

5. (Currently amended) Method for determining the nucleotide base sequence of a DNA molecule comprising the steps of:

incubating a DNA molecule annealed with a primer molecule able to hybridize to said DNA molecule in a vessel containing a molecule comprising the following moiety of formula (II):

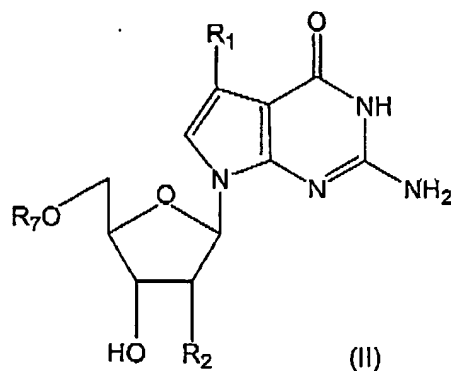


wherein R_1 is C_{1-10} alkyl group ~~optionally~~ substituted by hydroxyl, ~~amino~~, C_{1-4} alkoxy or halo; R_2 is hydrogen ~~or hydroxyl~~; and R_7 is a tri-phosphate or thiophosphate thereof, a DNA polymerase and at least one DNA synthesis terminating agent which terminates DNA synthesis at a specific nucleotide base in an incubating reaction; and

separating DNA products of the incubating reaction according to size whereby at least a part of the nucleotide base sequence of said DNA molecule can be determined.

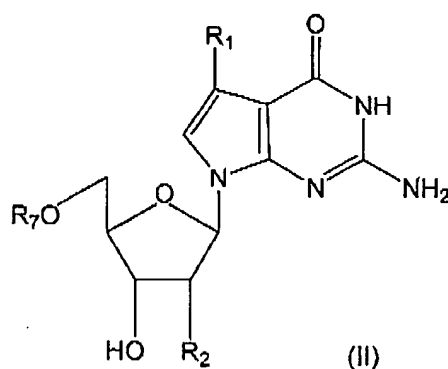
6. (Currently amended) Method for elongation of an oligonucleotide sequence comprising the step of:

incubating an oligonucleotide sequence with a molecule comprising the following moiety of formula (II);



wherein R_1 is C_{1-10} alkyl group substituted by hydroxyl, ~~amino~~, C_{1-4} alkoxy or halo; R_2 is hydrogen; and R_7 is a tri-phosphate or thiophosphate thereof, and a DNA polymerase such that said molecule is added to the oligonucleotide sequence.

7. (Currently amended) A compound of the formula (II):



wherein R_1 is C_{1-10} alkyl group substituted by hydroxyl, ~~amino~~, C_{1-4} alkoxy or halo; R_2 is hydrogen; and R_7 is H or a mono-, di-, or tri-phosphate or thiophosphate thereof.

8. (Currently amended) A compound according to claim 7, wherein R_1 is a C_{2-8} alkyl group substituted by hydroxyl, C_{1-4} alkoxy or halo.

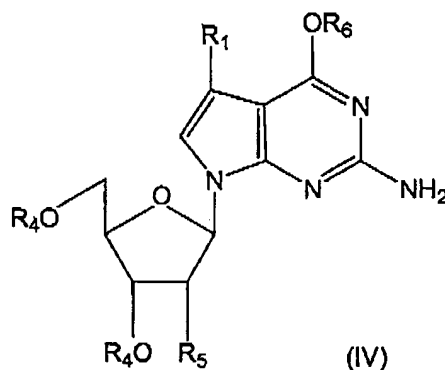
9. (Original) A compound according to any of the claims 7 or 8 wherein the compound of the formula (II) is present as a triphosphate.

12. (Previously presented) A compound of claim 7, wherein said compound is 7-Hydroxymethyl-7-deaza-2'-deoxyguanosine or a mono-, di-, or tri-phosphate thereof.

13. (Currently amended) A compound according to any one of claim ~~10, 11, or~~ 12, wherein said compound is a triphosphate.

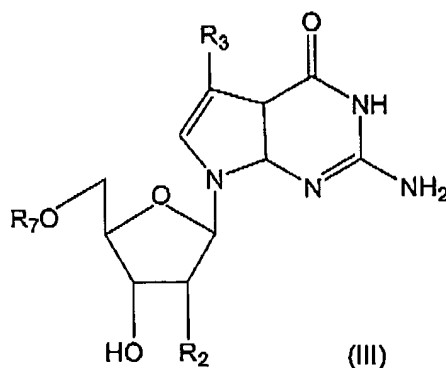
14. (Currently amended) A process for the preparation of a compound of the formula (II) wherein R_1 is C_{1-10} alkyl group ~~optionally~~ substituted by hydroxy, ~~amino~~, C_{1-4} alkoxy or halo; R_2 is hydrogen ~~or hydroxy~~, and R_7 is H or a mono-, di-, or tri-phosphate or thiophosphate thereof, which comprises:

(i) the deprotection of a compound of the formula (IV):



wherein R_1 is C_{1-10} alkyl group substituted by hydroxy, amino, C_{1-4} alkoxy or halo and R_4 is a protecting group, R_5 is hydrogen ~~or a group OR4~~ and R_6 is a protecting group which is the same or different to R_4 , or

(ii) when R_1 is other than methyl the reduction of a compound of the formula (III)

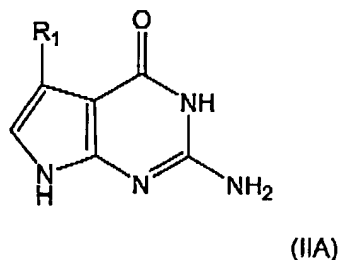


wherein R_2 is hydrogen, R_3 is C_{2-20} alkynyl group substituted by hydroxyl, amino, C_{1-14} alkyl substituted amino, C_{1-4} alkoxy or halo, and R_7 is H or a mono-di-, or tri-phosphate thereof;

(iii) and optionally thereafter preparing a mono-, di-, or triphosphate or thiophosphate.

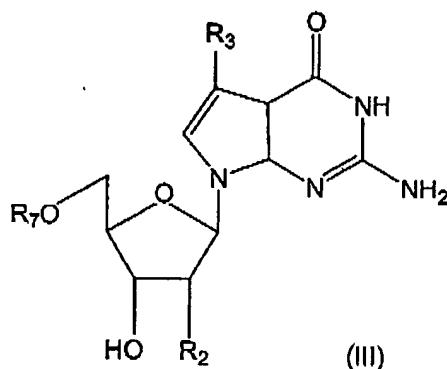
15. (Currently amended) A nucleotide sequence containing a compound of any one of claims ~~10, 11, or~~ 12.

16. (Currently amended) A deoxyribonucleic acid sequence containing a base of the formula:



wherein R₁ is a C₁₋₁₀ alkyl group substituted by hydroxyl, ~~amino~~, C₁₋₄ alkoxy or halo.

19. (Previously presented) A compound of the formula (III):



wherein R₂ is hydrogen or hydroxyl and R₃ is C₂₋₁₀ alkynyl group substituted by hydroxyl, C₁₋₄ alkyl substituted amino, C₁₋₄ alkoxy or halo, and R₇ is a mono-, di-, or tri-phosphate or thiophosphate thereof.

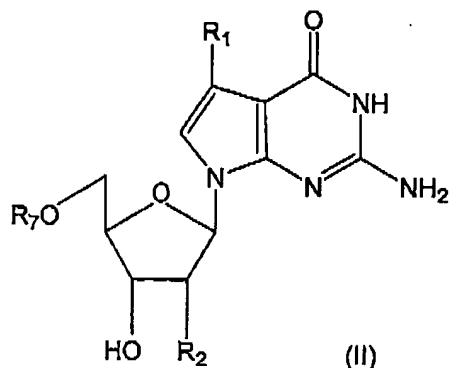
20. (Previously presented) A compound of claim 7 wherein R₇ is a di-, or tri-phosphate or thiophosphate thereof.

21. (Previously presented) The method of claim 5, wherein said molecule containing a moiety of formula (II) is a compound of formula (II).

22. (Previously presented) The method of claim 6, wherein said molecule containing a moiety of formula (II) is a compound of formula (II).

23. (Currently Amended) A method for determining the nucleotide base sequence of a DNA molecule comprising the steps of:

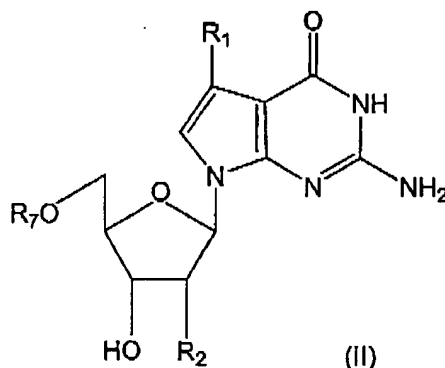
incubating a DNA molecule annealed with a primer molecule able to hybridize to said DNA molecule in a vessel containing a compound of formula (II):



wherein R_1 is ~~an isopropyl group~~ ~~C_{1-10} alkyl group optionally substituted by hydroxyl, amino, C_{1-4} alkoxy or halo~~; R_2 is hydrogen or hydroxyl; and R_7 is a tri-phosphate or thiophosphate thereof; a DNA polymerase, and at least one DNA synthesis terminating agent which terminates DNA synthesis at a specific nucleotide base in an incubating reaction; and separating DNA products of the incubating reaction according to size whereby at least a part of the nucleotide base sequence of said DNA molecule can be determined.

31. (Previously presented) The method of claim 5, wherein said moiety of formula (II) is 7-Hydroxymethyl-7-deaza-2'-deoxyguanosine.

32. (New) A compound of formula (II):



wherein R_1 is an isopropyl group; R_2 is hydrogen or hydroxyl; and R_7 is a mono-, di- or tri-phosphate or thiophosphate thereof.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance: the prior art neither teaches nor fairly makes obvious a structure (II) as recited in the claims wherein R₁ is an isopropyl group or is a C₁₋₁₀ alkyl substituted by the recited substituents or is a substituted alkynyl. As the structure is not taught or made obvious by the prior art, neither are the claimed methods of use.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marjorie A. Moran whose telephone number is (571) 272-0720. The examiner can normally be reached on Mon. to Wed, 7:30-4; Thurs 7:30-6; Fri 7-1 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward can be reached on (571)272-0722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Marjorie A. Moran
Primary Examiner
Art Unit 1631

Marjorie A. Moran
11/10/05